Docket No. 741124-79

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	
	:	
Michael HERMANN	)	Group Art Unit: 2872
	:	
Application No.: 09/817,797	)	Examiner: Audrey Y. Chang
	:	
Filed: March 27, 2001	)	Confirmation No. 8356
	:	
For: DEVICE FOR QUANTITATIVE ASSESSMENT OF THE ALIGNED POSITION OF TWO MACHINE PARTS, WORKPIECES OR THE LIKE:	)	

APPEAL BRIEF

Mail Stop Appeal Brief-Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal brief is presented in furtherance of the Notice of Appeal filed September 19, 2007, in connection with the above-identified application, a Notice of Panel Decision from Pre-Appeal Brief Review having been issued on October 29, 2007.

Real party in interest.

Prüftechnik Dieter Busch AG of Germany is the real party in interest.

Related appeals and interferences.

There are no related appeals or interferences.

Status of Claims.

Claims 1, 3 & 4 stand rejected, and claim 2 has been cancelled.

Status of Amendments.

No amendment was filed subsequent to final rejection being appealed.

Summary of claimed subject matter.

A device for measuring or evaluating the relative angular offset position of two elements with respect to each other (Fig. 3), comprising a collimated light source 20 for producing at least one light beam (25) is connected to a first of the two elements at a known location (paragraph [0018], second sentence, page 5) and a first two-dimensionally readable optoelectronic sensor (110) and at least one second two-dimensionally readable optoelectronic sensor (120) connected to a second of the two elements, each of which is in a fixed relative alignment with respect to each other (paragraph [0018], third sentence, page 5) at a known location such that a portion of the at least one light beam (25) is incident on a surface of an optoelectronically active layer of the first optoelectronic sensor (110, paragraph [0018], last sentence, page 5) and is reflected by the surface of the optoelectronically active layer as a light beam (125) directly onto a surface of the at least one second two-dimensionally readable optoelectronic sensor (120, Fig. 3). An electronic means for receiving output signals from each of the optoelectronic sensors representing the coordinates at which the at least one light beam and reflected portion of the at least one light beam are detected on each respective sensor of the optoelectronic sensors, processing the signals, and computing the relative angular offset position of the two elements with respect to each other based on the coordinates detected (paragraph [0019], spanning pages 5 & 6). In alternative embodiments, a portion of the light beam incident on the first two-dimensionally readable optoelectronic sensor is reflected as a plurality of light beams (125, 225, 325; Fig. 4) in a folded beam path (125, 125'; Fig. 5 modification of Fig. 4) by a surface of an optoelectronically active layer of the first optoelectronic sensor (110) directly onto the second two-dimensionally readable optoelectronic sensor (see, paragraphs [0021] and [0022], page 6).

Grounds of rejection to be reviewed on appeal.

Whether claims 1, 3 and 4 are unpatentable under 35 U.S.C. § 112, first paragraph as failing to meet the written description requirement.

Whether claims 1, 3 and 4 are unpatentable under 35 U.S.C. § 112, first paragraph as being based on a non-enabling disclosure.

Whether claims 1, 3 and 4 are unpatentable for indefiniteness under 35 U.S.C. § 112, second paragraph.

Whether claims 1, 3 and 4 are unpatentable under 35 U.S.C. § 103(a) over the Holzl '998 patent when viewed in conjunction with applicant's admitted prior art.

Argument.

Rejection of claims 1, 3 and 4 as being unpatentable under 35 U.S.C. § 112, first paragraph as failing to meet the written description requirement.

As noted by the Examiner, to satisfy the written description requirement, a patent specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. It has been held that there is no *in haec verba* requirement for literal use of the claim language, and that it is sufficient that newly added claim limitations be supported in the specification through express, implicit, or inherent disclosure. Furthermore, it is stated in MPEP § 2163III(a) that:

> A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption. See, e.g., *In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). The examiner, therefore, must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant's disclosure a description of the invention defined by the claims. *Wertheim*, 541 F.2d at 263, 191 USPQ at 97. In rejecting a claim, the examiner must set forth express findings of fact regarding the above analysis which support the lack of written description conclusion. These findings should:
>
> (A) Identify the claim limitation at issue; and
>
> (B) Establish a prima *facie* case by providing reasons why a person skilled in the art at the time the application was filed would not have recognized that the inventor was in possession of the invention as claimed in view of the disclosure of the application as filed. A general allegation of "unpredictability in the art" is not a sufficient reason to support a rejection for lack of adequate written description.

In the present case, the Examiner has failed to establish facts that demonstrate the specification does not describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention without any explanation of the type required as to why that is the case.

On the other hand, applicant has submitted a Declaration of Roland Hölzl (hereafter, the "Hölzl Declaration"), the inventor of the U.S. Patent No. 5,026,998 which the Examiner relied upon in her rejections under § 103 which provides factual evidence that directly refutes the assumptions and conclusions expressed by the Examiner. The first paragraph of section 4 of the Declaration contains a statement by one of ordinary skill in that art that the specification "reflects the fact that The Inventor was in possession of the invention recited in The Claims," and then, in the following paragraphs of that section explains in detail why such is the case. As noted by the Court in its decision in *In re Lange,* 644 F.2d 856 (CCPA 1981), 209 USPQ 288 "The disclosure in question must be read in light of the knowledge possessed by those skilled in the art, and knowledge can be established by affidavits of fact composed by an expert." Thus, applicant having established the knowledge of those skilled in the art by expert declaration, in the absence of facts which rebut those established by the declarant, not merely the examiner's personal opinions, the rejection based upon the written description requirement must be reversed.

Rejection of claims 1, 3 and 4 as being unpatentable under 35 U.S.C. § 112, first paragraph as being based on a non-enabling disclosure.

The same section 4 of the Hölz Declaration referred to above also clearly establishes that one of ordinary skill in the art would know how to make and use the invention, both with respect to the known location recitations and how to measure and evaluate the relative position of two elements with respect to each other. As pointed out in MPEP § 2164.05, a "declaration or affidavit is, itself, evidence that must be considered .... The examiner should **never** make the determination based on personal opinion" (emphasis in original). Still further, MPEP § 21604.08 points out that the Federal Circuit has held that"[a]ll that is necessary is that one skilled in the art be able to practice the claimed invention, given the level of knowledge and skill in the art. Further the scope of enablement must only bear a

"reasonable correlation" to the scope of the claims. See, e.g., *In re Fisher*, 427 F.2d 833, 839, 166 USPQ 18, 24 (CCPA 1970)."

Here, the declarant has explained why/how one of ordinary skill in art would be able to practice the claimed invention given the disclosure of the Lysen patent (USP 6,337,742), the fact that "the primary difference between the device described in the present application and that described in the Lysen Patent is that the beam splitter 22 of the Lysen Patent is eliminated and the reflectivity of sensor 110 of the Hermann Application is utilized instead," and that the reference in paragraph [0026] of the specification to the fact that the invention "is 'especially suited' for use in the position detection system of "German Patent Application DE 19733919 and U.S. Patent 6,049,378" (which the Examiner evidently does not contend is invalid for lack of an enabling disclosure) is a clear disclosure that the techniques for measuring or evaluating the relative position of two elements with respect to each other of the Lysen Patent apply to the invention of the present application.

The Examiner's comments indicate that her rejection is based on the lack of explicit statements, but no such requirement exists in the law. To the contrary, specifications are written to the level of ordinary skill in the art. Thus, the Examiner's reference in item (2) spanning pages 2 & 3 of the final rejection to those items which are not mentioned in the specification is irrelevant given that the declarant Hözl has stated these factors to be among those items known to one of ordinary skill. The Examiner lacks the authority to simply refute factual evidence without demonstrating that the facts are incorrect and are outside of what was known in the art.

Accordingly, the rejection of claims 1, 3 and 4 as being unpatentable under 35 U.S.C. § 112, first paragraph as being based on a non-enabling disclosure is not sustainable and should be reversed.

Rejection of claims 1, 3 & 4 for indefiniteness under 35 USC § 112, second paragraph

The claims have also been objected as being confusing and indefinite; however, these objections are in reality a rejection under 35 USC § 112 and should be treated as such. The Examiner should not be permitted to circumvent applicant's right to appeal what is actually is clearly a rejection for indefiniteness under 35 USC § 112 by incorrectly calling it an

objection. The Examiner has stated "the phrases 'known location', is confusing and indefinite since it is not clear with respect to what are these known locations." To support her position, the Examiner has merely conjectured reasons why one might find the claims indefinite with reference to the possibility of different coordinate systems being used, but provides no evidence which would indicate that such views would be consider problems by one working in this field. On the other hand, the Declarant Hölz explains in detail in paragraph 4 of his declaration why "the 'known location' recitation found in claims 1& 3 would be found to be clear and definite by one of ordinary skill in the art" for specific reasons. The Examiner's position is tantamount to say if one puts something in a specific spot, that person would not know its location. Furthermore, contrary to the Examiner's position, the coordinate system used to identify the "known" location is irrelevant, as is whether multiple coordinate systems are used since known techniques exist for converting from one coordinate system to another, e.g., geodedic to XYZ, and in fact, commercial software programs are readily available that can convert and transform spatial data between any of the hundreds of known coordinate systems.

Thus, it is submitted that the appealed claims are clear and definite, so the rejection for being "confusing and indefinite" should be withdrawn.

Rejection of claims 1, 3 and 4 as being unpatentable under 35 U.S.C. § 103(a) over the Holzl '998 patent when viewed in conjunction with applicant's admitted prior art.

In response to the Examiner's rejection, applicant submitted the above mentioned Hölzl Declaration after having previously submitted a declaration of Heinz P. Bloch (hereafter, the Bloch Declaration). As also noted above, the declarant Hölz is the inventor of the U.S. Patent No. 5,026,998 which the Examiner has relied upon in her rejections under § 103. This Declaration provides factual evidence that directly refutes the assumptions and conclusions expressed by the Examiner and explains why the invention is not obvious in view of his patent and the acknowledged commercially available optoelectronic sensors (see, paragraphs 3 & 5 of the Hölz Declaration. Similarly, paragraphs 3-7 of the Bloch Declaration also explain why the reflectivity known sensors was not obvious to use, and in particular, why it would not be obvious to use their reflectivity to modify the device of the Hölz patent.

In the face of such evidence from the inventor of the patent upon which she relies and from an independent, accomplished engineer and inventor working in the relevant field, it is improper from the Examiner to rely upon her personal opinion as to what one of ordinary skill in the art would have found to be obvious without providing any factual evidence to support her positions. That is, declaration evidence provided clearly and unequivocally establishes that the invention would not have been obvious from anything taught that is taught by the applied prior art even when considered in combination with that which was known to those of ordinary skill in the art. For example, paragraphs 3 & 5 of the Hözl Declaration, state in part:

> ... at that the time of that the Hermann Application was filed, I and others in the field considered the reflectivity of the sensors to be a problem which had to be minimized or eliminated, for example, by blackening internal surfaces to avoid stray reflections, etc. and I know of no one that considered the reflectivity of the optoelectronic sensors to be a usable feature prior to that discovery by Mr. Michael Hermann, the inventor of the Hermann Application (hereafter, "The Inventor").
>
> ... there is simply no basis for the Examiner's conclusion that it would have been obvious to use the reflective properties of the commercially available optoelectronic sensors in the manner taught by the Hermann Patent Application and in the manner set forth in The Claims. Likewise, while the operation principles of the device of the Hermann Patent Application are the same as in the Lysen Patent (not the device of My Patent which does and cannot use a housing in which first and second two-dimensionally readable optoelectronic sensors are fixed), there is simply no factual basis for the Examiner's conclusion that it would be "an obvious matter of design choice" to make the ***structural*** changes necessary to go from the device of the Lysen Patent to that of the Hermann Patent Application while retaining the same basic function, let alone to do so going from the very different method and apparatus of My Patent to that of the Hermann Application.

Likewise, paragraphs 4-7 of the Bloch Declaration state in part:

> the specification of the Hermann Application referred to by the Examiner merely indicates the existence of commercially available optoelectronic sensors that can be used in the practice of the invention of the Hermann Application. However, I find nothing in that description which would suggest knowledge of this fact by anyone other than the inventor of the Hermann Application. Furthermore, based on my knowledge and experience, the reflectivity of such sensors was never used for alignment determination purposes prior to the invention of the Hermann Application, nor was it

> recognized that the reflectivity of such sensors was sufficient for that purpose. To the contrary, the reflectivity of such sensors was generally treated as a characteristic which needed to be suppressed for alignment purposes by the use of an anti-reflectivity coating.
>
> 5. The Examiner's comments appear not to take into consideration either the lack of known reason to use the reflectivity of known optoelectronic sensors in an alignment device or the factors that would necessarily have to have been recognized for someone to consider such use of the known optoelectronic sensors....
>
> 6..... Without a reason or motivation for making such wholesale changes (which I find to be totally absent from the Hölzl Patent, the Examiner's reasoning, and the state of the art as I am aware of it), it is simply not reasonable to think that those working in the field would find it obvious to change from an established practice to one that had never been previously considered.
>
> 7..... the evidence indicates that one of ordinary skill in the art would not have been able to arrive at a device having the features of the claims of the Hermann Application based on anything objectively derivable from the Hölzl Patent, and the mere existence of commercially available optoelectronic sensors that could be used to practice the invention of the Hermann Patent.

Not only is the Examiner's conclusions of obviousness erroneous and contrary to facts established by declaration, but they have been arrived at using an improper "obvious matter of design choice" standard of obviousness that is contrary to the law as stated by both the Board of Appeals in the case of Ex Parte Gerlach and Werner, 212 USPQ 471, (1980) which states that:

> There is nothing in the statutes or the case law which makes 'that which is within the capabilities of one skilled in the art' synonymous with obviousness.
>
> The examiner provides no reason why, absent the instant disclosure, one of ordinary skill in the art would be motivated to change [the structure of the references to that which was claimed].

and the Federal Circuit which has stated that the mere fact that a modification could be made does not make it obvious absent a teaching of desireability; see, In re Deminski, 796 F.2d 436, 230 USPQ 313 (Fed. Cir. 1986) and In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). In the present case, not only has the Examiner failed to provide the requisite reason or motivation for what she contends to be obvious, but she also does not even attempt

to determine what changes would be needed since more than a mere change of one sensor for another is required. Thus, the Examiner has not made the factual determinations set forth in Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 48 (Supreme Court 1966), which include providing reasons why one having ordinary skill in the art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention based upon some teaching, suggestion or inference in the prior art, Uniroyal, Inc. v. Rudkin-Wiley, 5 USPQ2d 1434 (Fed. Cir. 1988). The statement that something is an "obvious design choice" is a mere conclusion for which some factual evidence in the prior art must be established, something the examiner has wholly failed to do and something that the Declaration emphatically refutes.

Instead of performing a proper assessment of the obviousness of the claimed invention, the examiner has attempted to attack the declaration evidence on the basis that it does not describe the construction of the sensors and because the declarant is not an inventor of sensors having a reflective surface (see, section 1, paragraph (1), page 2 of the final office action), neither of which is relevant. That is, since the sensors of the invention are of conventional construction and it is the use, not the manufacture of such sensors to which the invention relates, what is material is that the declarant is knowledgeable of the reflective nature of such sensors and the manner in which they have been used, which is the case for both declarants.

Furthermore, rather than address the reasons that the declarants have found the invention to be unobvious, for example, the examiner has failed to indicated where it is taught or suggested by the AAPA (or Hölzl) that the reflective capabilities of the surface of a first optoelectronic sensor can be utilized in a two-sensor position determination system when the declarants state that such was unknown at the time that the present invention was made, the Examiner has essentially taken the position that as long as the operational principle remains the same, it would be obvious to convert a transmissive system to reflective system, irrespective of what structural changes might be necessary to do so (see, the sole full paragraph, page 9 of the final office action). It is incumbent upon the examiner, in the face of the declaration evidence submitted, to provide some evidence which refutes the declaration statements and demonstrates that someone other than this applicant recognized that the

reflectance possessed by the known optoelectronic sensors was anything other than a detriment and could be used to provide accurate position determinations in combination with a second optoelectronic sensor in the manner of the present invention, which she has not done. In this regard, applicant submitted to the examiner evidence of the results of a search of the USPTO patent database that revealed more than 1000 patents which disclose such anti-reflectance coatings for optoelectronic sensors, clearly supporting the declarants' views that one of ordinary skill in the art considered the reflective characteristics of the surface of an optoelectronic sensor to be an undesirable feature as evidenced by the common use of anti-reflection coatings on such sensors.

Furthermore, the examiner has made no attempt to refute the evidence provided which also included the fact that the devices of the referenced U.S. Patents 6,337,742 and 6,476,914 (which are more recent that that of the Hölz patent relied upon by the Examiner) found it necessary to use mirrors and a prism instead of the reflective capacity of the sensors, further indicating that the potential usefulness of the reflective properties of know sensors could be used and need not be counteracted. In this regard, it is pointed out that the Federal Circuit has held that proceeding contrary to accepted wisdom in the art is evidence of nonobviousness. *In re Hedges,* 783 F.2d 1038, 228 USPQ 685 (1986).

Therefore, in light of the deficiencies in the Examiner's assessment commented upon above, even if an initial *prima facie* case of obviousness had been established by the proposed combination of the teachings of Holzl and AAPA, it has been overwhelmingly rebutted so that the burden of proof shifted back to the Examiner to provide factual evidence, not her own opinions, which would support a conclusion of obviousness despite the evidence submitted by applicant, something that has not even been attempted by the examiner. Consequently, the rejection of claims 1, 3 and 4, under § 103(a), is improper and should now be reversed.

Conclusion

All of the examiner's rejections have been demonstrated to be improper and contrary to established facts. Therefore, the Board is requested to reverse all of the appealed rejections.

Accompanying this Brief is payment of the Appeal Brief fee of $ 255.00, and any overage or shortage thereof may be charged or credit to Deposit Account No. 502478(741124-79).

Respectfully submitted,

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DSS:kmm

Claims appendix.

1. (Currently Amended) Device for measuring or evaluating the relative angular offset position of two elements with respect to each other, comprising:

- a collimated light source means for producing at least one light beam connected to a first of the two elements at a known location;

- a first two-dimensionally readable optoelectronic sensor and at least one second two-dimensionally readable optoelectronic sensor connected to a second of the two elements each of which are in a fixed relative alignment with respect to each other at a known location such that a portion of said at least one light beam incident on a surface of an optoelectronically active layer of the first optoelectronic sensor is reflected by the surface of the optoelectronically active layer as a light beam directly onto a surface of the at least one second two-dimensionally readable optoelectronic sensor;

- electronic means for receiving output signals from each of the optoelectronic sensors representing the coordinates at which the at least one light beam and reflected portion of the at least one light beam are detected on each respective sensor of the optoelectronic sensors, processing the signals, and computing the relative angular offset position of the two elements with respect to each other based on the coordinates detected.

2. (Canceled)

3. (Currently Amended) Device for measuring or evaluating the relative angular offset position of two elements with respect to each other, comprising:

- a collimated light source for producing at least one light beam connected to a first of the two elements at a known location;

- a first two-dimensionally readable optoelectronic sensor and at least one second two-dimensionally readable optoelectronic sensor;

- a housing, connected to a second of the two elements at a known location, in which the first and second two-dimensionally readable optoelectronic sensors are positioned relative to one another at a known location with respect to said housing such that a portion of the light beam incident on the first two-dimensionally readable optoelectronic sensor is reflected as a

plurality of light beams in a folded beam path by a surface of an optoelectronically active layer of the first optoelectronic sensor directly onto the second two-dimensionally readable optoelectronic sensor;

- electronic means for receiving output signals from the optoelectronic sensors, processing the signals representing the coordinates at which the at least one light beam and reflected portion of the at least one light beam are detected on each respective sensor of the optoelectronic sensors, and computing the relative angular offset position of the housing relative to the light source based on the coordinates of incidences of the at least one light beam on the surfaces of the two-dimensionally readable optoelectronic sensors detected.

4. (Currently Amended) Device for measuring or evaluating the relative and angular offset position of two elements with respect to each other, comprising:

- a collimated light source means for producing at least one light beam at a known coordinate location;

- a first two-dimensionally readable optoelectronic sensor;

- at least one second two-dimensionally readable optoelectronic sensor in a fixed relative alignment with respect to the first two-dimensionally readable optoelectronic sensor at a known location such that the at least one light beam from the light source means is incident on a surface of an optoelectronically active layer of the first two-dimensionally readable optoelectronic sensor and a portion of the at least one light beam is reflected by the surface of the optoelectronically active layer as at least one light beam directly onto a surface of the at least one second two-dimensionally readable optoelectronic sensor;

- electronic means for receiving output signals from each of the optoelectronic sensors, processing the signals representing the coordinates at which the at least one light beam and reflected portion of the at least one light beam are detected on each respective sensor of the optoelectronic sensors, and computing the relative angular offset position of the light source means relative to the incidences of the at least one light beam on the surfaces of the two-dimensionally readable optoelectronic sensors.

Evidence appendix.

1. Declaration of Roland Hölz filed April 17, 2007 and considered by the examiner in her Office Action of June 15, 2007.

2. Declaration of Heinz P. Bloch filed January 7, 2005 and considered by the examiner in her Office Action of March 30, 2005.

3. USPTO patent database printout submitted with applicant's amendment filed December 1, 2003, neither addressed nor refused entry by examiner in following office actions.

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DECLARATION OF ROLAND HÖLZL

I, Roland Hölzl, declare that:

1. I am the same Roland Hölzl that is the inventor of the shaft alignment checking method of U.S. Patent No. 5,026,998 (hereafter, "My Patent"), and am an inventor or co-inventor of the inventions of U.S. Patent Nos. 6,566,871; 6,515,294; 6,476,914; 6,146,000; 5,049,757, and others.

2. I have reviewed a copy of United States Patent Application Publication US 2001/0052983 A1, which I understand corresponds to the above-identified U.S. Patent Application (hereafter, the "Hermann Application") as originally filed. I have reviewed the attached Amendment After Second RCE which I understand contains the claims that presently exist in the application (hereafter, "The Claims") and the appended communication from the Examiner dated November 7, 2006 (hereafter, the "Office Action"). I also have reviewed Lysen et al. U.S. Patent No. 6,337,742 (hereafter, the Lysen Patent) which is the U.S. counterpart of the German Patent

Application DE 38 14 466 that is described in paragraphs [0003] and [0004] of the Hermann Application.

3. Based on my knowledge and experience, those of ordinary skill in the art did not know that the reflectivity of the surface of sensors that were commercially available prior to the March 27, 2001, filing date of the Hermann Application was sufficient to enable them to be usable as either the mirror surfaces 6a of My Patent or in the manner in which the reflectivity of the sensors 110, 120 is used as is described in Hermann Application. To the contrary, at that the time of that the Hermann Application was filed, I and others in the field considered the reflectivity of the sensors to be a problem which had to be minimized or eliminated, for example, by blackening internal surfaces to avoid stray reflections, etc. and I know of no one that considered the reflectivity of the optoelectronic sensors to be a usable feature prior to that discovery by Mr. Michael Hermann, the inventor of the Hermann Application (hereafter, "The Inventor").

4. Based on my knowledge and experience, the statements contained in items 6 & 8-10 of the Office Action, incorrectly reflect the knowledge of one of ordinary skill in the alignment art. Furthermore, based on my knowledge and experience in the alignment art, the Hermann Application adequately discloses how to make and used the invention defined by The Claims and reflects the fact that The Inventor was in possession of the invention recited in The Claims, with respect to which the "known location" recitation found in claims 1& 3 would be found to be clear and definite by one of ordinary skill in the art as explained further below.

Considering first the "known location" language, it is known to me that it has been standard practice in the shaft alignment field to first determine the distance of a least one of the sensors on one of the shafts from the laser beam on the other of the shafts, e.g., a tape measure, and for this reason all suppliers of alignment devices ship their products with a tape measure and have been doing so for decades, and as stated in the last paragraph of column 4 of the Lysen Patent, "the distance of the position detectors 23 and 25 from the radiation source S is obtained in any manner independently of the measuring device." Furthermore, it would have been apparent to one of ordinary skill in the alignment art that the primary difference between the device described in the Hermann Application and that described in the Lysen Patent is that the beam splitter 22 of the Lysen Patent is eliminated and the reflectivity of sensor 110 of the Hermann Application is utilized instead, so that all of basic comments contained therein, including those in the first paragraph of column 5 with regard to how "the knowledge of this distance [i.e., the distance between the light source S and the detectors 23 or 25] needed for the calculation can be obtained," would have been recognized to apply to the invention recited in The Claims. Thus, one of ordinary skill in the art would not be confused by this recitation and would know that the recitations of "a collimated light source ...connected to a first of the two elements at a known location" and "a housing, connected to a second of the two elements at a known location" is referring to this standard practice of determining the distance between the light source and the sensor unit and would know multiple ways of doing so.

Likewise, the recitation that "the first and second two-dimensionally readable optoelectronic sensors are positioned relative to one another at a known location with respect to said housing" would have been recognized as a basic requirement of the device disclosed in the Hermann Patent Application. As noted in the Lysen Patent (see, e.g., second full paragraph of column 3), the position sensors must be aligned in the direction of projection of the beam from the light source, and since the sensors 110, 120 of the Hermann Patent Application are enclosed with the housing 500, this cannot be done without knowing the positional relationship between the housing and the sensors in it. In the design phase of the Hermann device the relative positions of the sensors with respect to the housing and the laser beam are directly determined. Furthermore, that the position of these sensors is known is readily apparent from the reference to the sensor location coordinates IC1; A and IC1; B in paragraph [0017] of the Hermann Patent Application.

Moreover, the statement in paragraph [0026] to the effect that the device of the Hermann Application has is "especially suited" for use in the position detection system of "German Patent Application DE 19733919 and U.S. Patent 6,049,378" is a clear disclosure that techniques for measuring or evaluating the relative position of two elements with respect to each other of the Lysen Patent apply to the invention of the Hermann Application.

5. With regard to the Examiner's positions stated in paragraph 12 of the Office Action, based on my knowledged and experience, the conclusions stated in that paragraph are not supported by the facts as they exist. First, based upon the facts set forth above in paragraph 3 of this Declaration, there is simply no basis for the Examiner's conclusion that it would have been obvious to use the reflective properties of the commercially available optoelectronic sensors in the manner taught by the Hermann Patent Application and in the manner set forth in The Claims. Likewise, while the operation principles of the device of the Hermann Patent Application are the same as in the Lysen Patent (not the device of My Patent which does and cannot use a a housing in which first and second two-dimensionally readable optoelectronic sensors are fixed), there is simply no factual basis for the Examiner's conclusion that it would be "an obvious matter of design choice" to make the ***structural*** changes necessary to go from the device of the Lysen Patent to that of the Hermann Patent Application while retaining the same basic function, let alone to do so going from the very different method and apparatus of My Patent to that of the Hermann Application.

6. All statements made herein of my/own knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.

April 11, 2007

R. Hölzl

Roland Hölzl

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AMENDMENT AFTER SECOND RCE

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following is presented in response to the Office Action that was mailed on November 14, 2005, in connection with the above-identified application, a suspension of Action on this application after filing of a second RCE having been granted to August 15, 2006.

AMENDMENTS TO THE CLAIMS:

1. (Currently Amended) Device for measuring or evaluating the relative ~~parallel offset and~~ angular offset position of two elements with respect to each other, comprising:

- a collimated light source means for producing at least one light beam connected to a first of the two elements at a known ~~coordinate~~ location;

- a first two-dimensionally readable optoelectronic sensor and at least one second two-dimensionally readable optoelectronic sensor connected to a second of the two elements each of which are in a fixed relative alignment with respect to each other at a known ~~coordinate~~ location such that a portion of said at least one light beam incident on a surface of an optoelectronically active layer of the first optoelectronic sensor is reflected by the surface of the optoelectronically active layer as a light beam directly onto a surface of the at least one second two-dimensionally readable optoelectronic sensor;

- electronic means for receiving output signals from each of the optoelectronic sensors representing the coordinates at which the at least one light beam and reflected portion of the at least one light beam are detected on each respective sensor of the optoelectronic sensors, processing the signals, and computing the relative angular offset position of the two elements with respect to each other ~~position of the light source means relative to the incidences of the at least one light beam on the surfaces of the two-dimensionally readable optoelectronic sensors~~ based on the coordinates detected ~~relative to coordinates at which the at least one light beam would be detected if the parallel and angular offsets of the elements are zero~~.

2. (Canceled)

3. (Currently Amended) Device for measuring or evaluating the relative ~~parallel offset and~~ angular offset position of two elements with respect to each other, comprising:

- a collimated light source for producing at least one light beam connected to a first of the two elements at a known ~~coordinate~~ location;

- a first two-dimensionally readable optoelectronic sensor and at least one second two-dimensionally readable optoelectronic sensor;

- a housing, connected to a second of the two elements at a known ~~coordinate~~ location, in which the first and second two-dimensionally readable optoelectronic sensors are positioned relative to one another at a known ~~coordinate~~ location with respect to said housing such that a portion of the light beam incident on the first two-dimensionally readable optoelectronic sensor is reflected as a plurality of light beams in a folded beam path by a surface of an optoelectronically active layer of the first optoelectronic sensor directly onto the second two-dimensionally readable optoelectronic sensor;

- electronic means for receiving output signals from the optoelectronic sensors, processing the signals representing the coordinates at which the at least one light beam and reflected portion of the at least one light beam are detected on each respective sensor of the optoelectronic sensors,[[,]] and computing the relative ~~parallel offset and~~ angular offset position of the housing relative to the light source based on the coordinates of incidences of the at least one light beam on the surfaces of the two-dimensionally readable optoelectronic sensors detected ~~relative to coordinates at which the at least one light beam would be detected if the parallel and angular offsets of the elements are zero~~.

4. (Currently Amended) Device for measuring or evaluating the relative ~~parallel offset~~ and angular offset position of two elements with respect to each other, comprising:

- a collimated light source means for producing at least one light beam at a known coordinate location;

- a first two-dimensionally readable optoelectronic sensor;

- at least one second two-dimensionally readable optoelectronic sensor in a fixed relative alignment with respect to the first two-dimensionally readable optoelectronic sensor at a known ~~coordinate~~ location such that the at least one light beam from the light source means is incident on a surface of an optoelectronically active layer of the first two-dimensionally readable optoelectronic sensor and a portion of the at least one light beam is reflected by the surface of the optoelectronically active layer as at least one light beam directly onto a surface of the at least one second two-dimensionally readable optoelectronic sensor;

- electronic means for receiving output signals from each of the optoelectronic sensors, processing the signals representing the coordinates at which the at least one light beam and reflected portion of the at least one light beam are detected on each respective sensor of the optoelectronic sensors, and computing the relative <u>angular offset</u> position of the light source means relative to the incidences of the at least one light beam on the surfaces of the two-dimensionally readable optoelectronic sensors ~~based on the coordinates detected relative to coordinates at which the at least one light beam would be detected if the parallel and angular offsets of the elements are zero~~.

REMARKS

By the above amendments, the claims 1, 3 and 4 have been further amended. In view of these actions and the following remarks, further consideration of this application is requested.

The Examiner has objected to the preceding amendment of August 30, 2005, as containing new matter with regard the reference to a "known coordinate location" with respect to the light source means, the first optoelectronic sensor and the manner in which results are obtained and has rejected the claims on the same basis under 35 USC § 112, first paragraph. Without conceding the correctness of the Examiner's positions, to advance prosecution, the following remedial steps have been taken. Firstly, the reference to the know location of the light source means and first optoelectronic sensor being a coordinate location has been change to simply a known location. It is submitted that anyone of any skill in the art would realize that the locations of these elements would be known, and that such is necessary to the evaluation process. Additionally, with regard to the computing function, the language objected to by the Examiner has been removed and instead it is set forth that the relative angular offset position of the two elements with respect to each other is computed based on the coordinates detected by the sensors. It is submitted that such language is fully supported by the original disclosure of paragraphs [0020] and [0021]. Accordingly, withdrawal of the objection based on new matter and the rejection of the claims on the same basis under 35 USC § 112, first paragraph is requested

The claims were also rejected as being based on a non-enabling disclosure. However, as now amended, it is submitted that they are fully supported by disclosure, now being limited to the determination of the angular offset, the is clearly described in the specification at least in the paragraphs noted above, and which, from Examiner's comments relative to the Miller patent, the Examiner now recognizes to be obtainable from the use of two sensors. As for the Examiner's comment that "the two sensors only have information to determine the position between the two sensors but not the

two elements" is simply not correct. Since the position of the sensors and the light source is known and these elements, in use, are mounted on the elements, it is possible to mathematically determine from the impact coordinates of the light beam and reflected light beam what is the relative angular offset of the elements. In this regard, as previously noted, paragraph [0002] states that the references cited in the specification describe "[p]rocesses of the type to which the present invention is directed" and it is expressly stated that "in this connection reference should be made to the teaching thereof." Is it the Examiner's contention that these U.S. patents are invalid for failure to provide an enabling disclosure? On the other hand, the Examiner has failed to explain why the teaching this reference as to how a light beam from collimated light source connected to a first of the two elements at a known location and directed to sensors on the other of the elements, the location of which relative to each other and the light source is also known, can be used to determine angular offset of the elements from deviation of a light beam is not applicable to the present invention. As for the Examiner's comments on page 5 of the Action, they appear to be an exaggeration the does not reflect the actual situation and simply are not relevant to the claims as now presented. The Examiner has apparently ignored the fact that the light source and sensors are mount on the elements the relative positions of which are being determined, and it is an incorrect statement for the Examiner to assert than merely knowing the absolute position of the sensors and light source is sufficient to determine angular offset. Accordingly, withdrawal of the rejection of the claims under § 112 as being based on a non-enabling disclosure should now be withdrawn.

Turning now to the Examiner's rejection of claims 1, 3 and 4 under 35 U.S.C. 103(a) as being unpatentable over the Holzl '998 patent when viewed in conjunction with applicant's admitted prior art, since this rejection has been maintained based upon the § 112 issues that should now be withdrawn, applicant hereby incorporates by reference its prior positions supporting applicant's view that this rejection is totally inappropriate, as is the Examiner's failure to give appropriate weight to the declaration evidence submitted that clearly and unequivocally establishes that the

invention is not obvious from anything taught by Hölz when considered in combination with that which was known to those of ordinary skill in the art. For convenience, these arguments are quoted below:

"Firstly, the Examiner has recognized the structural difference between the arrangement of the present application in which the first optoelectonic sensor reflects light to the second optoelectronic sensor in contrast to the arrangement of Hölzl that he relies upon in which a portion of the light incident on the first optoelectonic sensor is transmitted through it to the second first optoelectonic sensor. However, rather than analyze why one of ordinary skill in the art would find it obvious to abandon the light transmissive arrangement of Hölzl and adopt the light reflective arrangement, as is require for proper establishment of a prima facie case of obviousness, the Examiner goes on to rationalize why going from one to the other is nothing more that "an obvious matter of design choice" based on functional and operation considerations which totally fail to address the structural issues involved or even to properly assess the state of the art and the differences between it and the claimed invention as required.

For example, the Examiner states that "it is implicitly true the whether the light incident on the second detector is reflected or transmitted from the first detector the operational principle for obtaining the relative position between the two shafts or elements do not change." However, this simplistic approach ignores the fact that using a reflective approach would require an entirely different positioning of the two sensors relative to each other and the light source (compare Figs. 3 & 4 of the present application and Figs. 2 & 3 of Hölzl) which, in turn, affects packaging of the components and how they would be usable on the shafts being aligned. For example, if sensor 9 were reflective instead of transimissive, sensor 10 could not be located on the opposite side of the sensor 9 from the light source as is shown by Hölzl.

Furthermore, the Examiner's reliance on applicant's admission that he has found commercially available optoelectronic sensors which sufficient reflectivity to be usable for his purposes does nothing to advance the Examiner's conclusion of

obviousness. That is, only the Applicant has established that sufficient light can be reflected from the surface of a first optoelectronic sensor to be received upon the surface of a properly positioned second optoelectronic sensor to enable the second sensor to sense the impinging reflected light and output a signal which accurately represents the position of the reflected light (beam) on the second optoelectronic sensor, and the Examiner has produced no evidence to indicate otherwise. The fact that a two optoelectronic sensor system can be used to determine accurate positional relationships between machine parts or elements is not an issue relevant to a determination of obviousness of the present invention since Hölzl already clearly establishes that fact. The true issue is as noted above, given that the art does not teach use of the reflectance of an optoelectronic sensor in the manner of the present invention, why would it have been obvious to do so. Relevant to the Examiner's inappropriate assessment of obvious is the Board of Appeals case of Ex Parte Gerlach and Werner, 212 USPQ 471, (1980) which states that:

> There is nothing in the statutes or the case law which makes 'that which is within the capabilities of one skilled in the art' synonymous with obviousness.
>
> The examiner provides no reason why, absent the instant disclosure, one of ordinary skill in the art would be motivated to change [the structure of the references to that which was claimed].

Similarly, the Federal Circuit has stated that the mere fact that a modification could be made does not make it obvious absent a teaching of desireability; see, In re Deminski, 230 USPQ 313 (Fed. Cir. 1886); In re Gordon, 221 USPQ 1125 (1984). In the present case, not only has the Examiner failed to provide the requisite reason or motivation for what he contends to be obvious, but he does not even attempt to determine what changes would be needed since more than a mere change of one sensor for another is required. Thus, the Examiner is reminded the Examiner is required to make the factual determinations set forth in Graham v. John Deere Co. of Kansas City, 383 U.S> 1, 48 (Supreme Court 1966) and to provide reason why one having ordinary skein in the art would have bee led to modfy the prior art or to combine prior art references to arrive at the claimed invention based upon some teaching, suggestion or

inference in the prior art, Uniroyal, Inc. v. Rudkin-Wiley, 5 USPQ2d 1434 (Fed. Cir. 1988). The statement that something is an "obvious design choice" is a mere conclusion for which some factual evidence in the prior art must be established, something the Examiner has wholly failed to do.

For example, the Examiner has failed to indicated where it is taught or suggested by the AAPA (or Holzl) that the reflective capabilities of the surface of a first optoelectronic sensor can be utilized in a two-sensor position determination system. The AAPA merely is that applicant has found a know sensor which will serve his needs but where is it indicated that anything was known to those other than applicant which would have led them to believe that any reflectance possess by such sensors was anything other than a detriment given Holzl and others use the transmittance of the first optoelectronic sensor to provide accurate position determinations in combination with a second optoelectronic sensor receiving the transmitted light from the first optoelectronic sensor, not reflectance, such that such a sensor would logically have an anti-reflectance coating applied if it were to be used for a Hölzl type system.

In fact, it was previously indicated how, conventionally, optoelectronic sensors are provided with an anti-reflection coating to reduce the reflectivity of the sensor, i.e., improve the transmittance as required by Holzl, a search of the USPTO patent database having been submitted that revealed more than 1000 patents which disclose such coatings for optoelectronic sensors. Simply put, the Examiner has not met his burden of establishing, through any teachings of Holzl or the AAPA, that one of ordinary skill in the art would recognized that the reflective characteristics of the surface of an optoelectronic sensor, rather than being an undesirable feature (as evidenced by the common use of anti-reflection coatings on such sensors) could be used to advantage. To the contrary, only the present inventor has determined that, contrary to conventional wisdom, a simple low cost apparatus for determining the positional relationship of elements which avoids the need for a partially transmitting

reflector can be produced based on using a sensor with a light reflective, not a light transmissive, surface.

Still further, if it were obvious to the reflectivity of known sensors, why would the devices of the referenced U.S. Patents 6,337,742 and 6,476,914 (which are more recent that that of the Hölz patent relied upon by the Examiner) have found it necessary to use mirrors and prism instead of the reflective capacity of the sensors? In this regard, it is noted Hölz is also one of the inventors of U.S. Patent 6,476,914, further indicating that the ability to rely on the reflectivity of the sensors was not apparent to those skilled in the art.

Therefore, in light of the deficiencies in the Examiner's assessment commented upon above, a prima facie case of obviousness has not been established by the combination of the teachings of Holzl and AAPA, and consequently, the rejection of claims 1, 3 and 4, under § 103(a), is improper and should now be withdrawn."

The present application should now be in condition for allowance and action to that effect is requested. However, should the Examiner find some issue to remain unresolved, or should any new issue arise, which could be eliminated through discussions with the Applicant's representative, then the Examiner is invited to contact the undersigned by telephone in order that the further prosecution of this application can thereby be expedited. Likewise, if the Examiner has some proposal for revisions to the claims that would facilitate allowance of this application, she is invited to present same to applicant.

Respectfully submitted,

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EXAMINER	
CHANG, AUDREY Y	

ART UNIT	PAPER NUMBER
2872	

DATE MAILED: 11/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Docketed By KHM 11-9-06
Verified By

Office Action Summary	Application No.	Applicant(s)	
	09/817,797	HERMANN, MICHAEL	
	Examiner	Art Unit	
	Audrey Y. Chang	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3 and 4* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3 and 4* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on August 15, 2006 has been entered.

2. This Office Action is also in response to applicant's amendment filed on August 15, 2006, which has been entered into the file.

3. By this amendment, the applicant has amended claims 1 and 3-4.

4. Claims 1 and 3-4 remain pending in this application.

5. The rejections to claims under 35 USC 112, first paragraph, set forth in the previous Office Action still holds, for the reasons stated below.

Response to Amendment

6. **The amendment filed August 15, 2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure.** 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: the **amended claims 1 and 3-4** recite the following phrases (1). A light source means ... at a *known location*, (2). A first two-dimensionally readable optoelectronic sensor ... at a *known location*... (3). And computing the *relative angular offset position* of the two elements with respect to each other **based** on the coordinates detected ". The specification simply **FAILS** to give explicitly support for such phrases and features.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. **Claims 1, and 3-4 are rejected under 35 U.S.C. 112, first paragraph,** as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The reasons for rejection based on the newly added matters are set forth in the paragraph above.

9. **Claims 1 and 3-4 are rejected under 35 U.S.C. 112, first paragraph,** as based on a disclosure which is **not enabling**. The *specific* output signals from each sensors and the specific information concerning the light source, (such as either the measurement of pulse time of the light travels to each sensor or the specific distance set for the light source means to each of the sensors), the *function* of the second sensor and the fixed relative alignment between the two sensors as *related* to the rest of the information, **and** the *so-called known locations* of the light source and the first and the second two-dimensionally readable optoelectronic sensors being defined *in what coordinate system* are *critical* or *essential* to the practice of the invention, but not included in the claim(s) is not enabled by the disclosure. See *In re Mayhew*, 527 F.2d 1229, 188 USPQ 356 (CCPA 1976). At this juncture, the specification and the claims **only teach** to have the **at least one** of the *sensors* connected to the second element, (in fact **claim 4** even **fails** to provide **any connection between the light source and the sensors to any of the elements which makes the detection even more mysterious**) and having the light *reflected* from the first sensor to the second sensor, (in claims 1 and 4 it is not clear if the second sensor connects to any of

the element and in claim 3 both the sensors are on the second element), but no relative information is given concerning each signal from the sensor to the light source means, *which is connected to the first element*. To the most, the two sensors only have information to determine the *relative position* between the two **sensors** but **not the two elements**. It is not clear how can the "*relative angular offset*" of the *light source mean*, (or two elements) be determined "*based on the coordinates detected*", (amendment to the claims). What are these *coordinates*? **In what coordinate systems are these coordinates defined?** The applicant being one skilled one in the art would have known that the coordinates on the two sensors are **two different coordinate systems and the readings of the coordinates will be from different coordinates that has no relationship to each other**, and since it is not clear "the *known locations*" are **based on what** coordinate systems, it is impossible to determine the "relative angular offset". Furthermore, "*angular offset*" has to be defined with respect to a *reference point*. It is not clear what is the *reference point* here to define such angular offset. The incident light only registers one point on the first sensor and the reflected potion of the light also just registers one point on the sensor. These two points may have corresponding coordinates base on **different coordinate systems** of the two sensors but it will not be able to determine the "angular offset" of the first element from the second element, wherein the specification **fails** to make any connection between these coordinates with the two elements. The specification at this juncture really FAILS to disclose **explicitly** the **fundamental principle** of the operation of the device.

The applicant is once again reminded respectfully that a two-dimensional readable optoelectronic sensor is like a *camera* it can only **register** the *point* that the light strikes the sensor, the information of the point cannot be enough to determine the relative position between the light source means and the sensor, in particular the relative distance certainly cannot be determined by a point. Furthermore, the specification and the claims **fail** to teach by having the light reflected from the first sensor to the second sensor, which either are both on the second element or **not sure where** is the second sensor, (that to the

most give relative positional information between the two sensors on the second element), will give information to determine the relative position between the first *element* and the second *element*. This process is like by measuring the length of the sofa will not tell you how *far* the sofa is located from the door or the angular offset of the sofa to the door. The claims therefore **fail** to provide workable devices.

Claims 1, and 3-4 have been amended to include the features that the light source means is connected to the first of the two elements at a *known location* and the at least one of the two sensors is connected to the second element at *a known location*. If this is the case, then simply using the two **known** locations one can *calculate* the relative location between the two elements since this means the coordinate locations of the two elements are KNOWN and can be calculated to determine the relative angular offset of the two elements WITHOUT even using the device at all. This makes the device totally redundant.

The applicant is respectfully noted that it is the requirements of 35 USC 112, that the specification **needs to provide explicitly and adequately teachings** of the enablement of the operation. At this juncture, the specification fails to provide any adequate teachings for achieving the claimed function. **Applicant's arguments based on paragraphs [0020] and [0021] of the specification are not persuasive to overcome the rejections since [0020] is just a description for a figure and [0021] is description for a PRIOR ART system (Figure 1) that does not have the disclosed and claimed arrangement of claims 1 and 3-4. Paragraph [0021] fails to provide the adequate teachings for determining the angular offset of two elements with the device claimed in claims 1 and 3-4. Also it is not clear where exactly is the point "A' " referred there it is therefore not clear where are the elements and where are the sensors as disclosed in Figure 1 discussed in paragraph [0021] which makes the description not understandable.**

Claim Objections

10. **Claims 1 and 3-4 are objected to because of the following informalities:**

(1). **Claims 1 and 3-4 have been amended** to include the phrases "known location", that is confusing and indefinite since it is not clear with respect to what are these known locations defined that is to say it is not sure if these known locations are measured in the same coordinate system or not? The coordinate systems for the light source and for EACH of the sensors can be very different.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. Claims 1 and 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Holzl (PN. 5,026,998) in view of applicant admitted prior art.

Holzl teaches an *alignment measurement mechanism* for measuring the relative positions between *two shafts* (1 and 2), *serves as the two elements*, wherein the mechanism comprises a *light source* (8) for generating a light beam (s) that incidents on a first and second *optoelectronic detectors* (9 and 10, Figures 2 and 3) that are connected to the second shaft (2). The two optoelectronic detectors are two-dimensional readable sensors that each generates two dimensional position signals as shown in Figure 2. Holzl further teaches that *a data converter* (3) and a *computer* (4), serve as the *electronic means and computer*, are included for processing the detected positional signal of the detectors to measure the relative position of the two shafts. The two dimensional position signals generated by each of the position detector are corresponding to the **incident points** of the light on the surface of each of the detectors. The calculating

electronics for computing the relative positions from the detected signals are implicitly included to determine the relative positions. It is implicitly true that only portion of the light incident on the first optoelectronic detector will reach the second optoelectronic detector.

It is implicitly true that the light source is located at a known location and the sensors are also located at known locations. The angular offset between the first and second element can be easily detected by measuring the light spots of the incident light registers on the two sensors (A and A', Figures 2 and 3). Since if the two elements are at the level the two spots will be aligned and if there is angular offset the straight lines connecting the two light spots will give an angular inclination that will revel the angular offset information.

This reference has met all the limitations of the claim with the exception that it does not teach explicitly the arrangement of having the light incidents on the first detector is *reflected instead of transmitted* to the second detector. However it is implicitly true that whether the light incident on the second detector is reflected or transmitted from the first detector the **operational principle** for obtaining the relative position between the two shafts or elements do not change. Since the principle is based on calculating the positional signals detected by the two detectors about the incident points of the light on the two detectors, the modification or the difference, concerning either reflecting or transmitting light from one detector to the other detector, does not change the function of detecting and calculating the relative positions of the two shafts. This difference is therefore considered as an obvious matter of design choice to one skilled in the art for the benefit of providing different design for the measurement mechanism. Furthermore, **applicant admitted prior art** teaches that a **reflective** type optoelectronic sensor such as CMOS sensor circuit is ***commercially available***, (please see page 5 lines 14-20 of the specification). It would then have been obvious to one skilled in the art to use a reflective type of detector to make the light reflected from the first detector to the second detector for the benefit of providing a more compact system.

With regard to the housing, the references do not teach such explicitly however it would have been obvious to one skilled in the art to use a housing for the detectors for the benefit of blocking out unwanted light to reach the detectors so that the detectors detect the signals more accurately.

Response to Arguments

13. Applicant's arguments filed on **August 15, 2005** have been fully considered but they are not persuasive. The amendment to the claims have been fully considered and they are rejected for the reasons stated above. Applicant's arguments are mainly based the amendments to the claims and they have been fully addressed in the paragraphs above.

Applicant is **respectfully requested** to **state explicitly** how can the angular offset of the two elements be determined by the two sensors and the light source, as arranged in the claimed arrangement, in particularly when the sensors and light source have no connections with respect to the two elements as recited in claim 4. Applicant's arguments based on the "known locations" of the light source and the sensors do not solve the problem of non-enablement since firstly it is not clear *with respect* to what are these known locations defined and how are they used to determined the angular offset.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Audrey Y. Chang whose telephone number is 571-272-2309. The examiner can normally be reached on Monday-Friday (8:00-4:30), alternative Mondays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Dunn can be reached on 571-272-2312. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Audrey Y. Chang, Ph.D.
Primary Examiner
Art Unit 2872

A. Chang, Ph.D.

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Docket No. 741124-79

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	) **RESPONSE UNDER 37 CFR 1.116 EXPEDITED PROCEDURE**
Michael HERMANN	) **EXAMINING GROUP 2872**
Application No.: 09/817,797	) Examiner: A. V. Chang
Filed: March 27, 2001	) Confirmation No. 8356
For: DEVICE FOR QUANTITATIVE ASSESSMENT OF THE ALIGNED POSITION OF TWO MACHINE PARTS, WORKPIECES OR THE LIKE	)

CERTIFICATE OF TRANSMISSION

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office: Fax No. (703) 872-9306 on January 7, 2005.

Kathleen M. McManus

Kathleen .M. McManus

DECLARATION OF HEINZ P. BLOCH

I, Heinz P. Bloch, declare that:

1. I am the owner of Process Machinery Consulting Co., hold Bachelor and Masters of Science degrees in Mechanical Engineering, I am a licensed professional engineer in the states of Texas and New Jersey, I hold five U.S. Patents including U.S. Patent No. 4,102,052 for a "DEFLECTION INDICATOR FOR COUPLINGS" for use in monitoring and determining axial deflection or positioning of a coupling, I have authored or co-authored over 300 technical papers, I have received several awards as an engineer including the ASME/STS Engineer of the Year Award (1995) and ASME Distinguished Service Award (2001).

2. I have reviewed the above identified patent application (hereafter, the HERMANN Application) including its specification and claims, and the positions stated by the Examiner in support of her decisions indicating that the claims do not define patentable subject matter, and also U.S. Patent No. 5,026,998 (hereafter, the Hölzl Patent) and "admissions" which form the basis of the Examiner's positions.

3. I understand that a significant aspect of the definition of the invention recited in claims 1, 3 and 4 is that two-dimensionally readable optoelectronic sensors are used to determine the relative alignment of two elements with respect to each other by a portion of at least one light beam incident on a surface of an optoelectronically active layer of one of the optoelectronic sensors being reflected by its surface directly as a light beam onto a surface of another of the two-dimensionally readable optoelectronic sensors, an electronic means receiving output signals from each of the optoelectronic sensors, processing the signals, and computing the relative position of the light source means relative to the incidences of the light beam on the surfaces of the two-dimensionally readable optoelectronic sensors. In particular, I understand a key issue to be whether or not it would have been obvious to use the reflectivity of as a means for directing light from one optoelectronic sensor to another.

4. A review page 5, lines 14-20 of the specification of the Hermann Application referred to by the Examiner merely indicates the existence of commercially available optoelectronic sensors that can be used in the practice of the invention of the Hermann Application. However, I find nothing in that description which would suggest knowledge of this fact by anyone other than the inventor of the Hermann Application. Furthermore, based on my knowledge and experience, the reflectivity of such sensors was never used for alignment determination purposes prior to the invention of the Hermann Application, nor was it recognized that the reflectivity of such sensors was sufficient for that purpose. To the contrary, the reflectivity of such sensors was generally treated as a characteristic which needed to be suppressed for alignment purposes by the use of an anti-reflectivity coating.

5. The Examiner's comments appear not to take into consideration either the lack of known reason to use the reflectivity of known optoelectronic sensors in an

alignment device or the factors that would necessarily have to have been recognized for someone to consider such use of the known optoelectronic sensors. That is, it would have to have been recognized that the reflectivity of the known optoelectronic sensors as well as their sensitivity would have been suitable for a sufficiently strong light source to be aimed at the first sensor without damaging it and that a sufficient amount of light would be reflected as a beam (not as dispersed light) to be readable at the other sensor in a way that would provide sufficiently accurate results. Apart from the Hermann Application, e.g., paragraph [0007] on page 2, I know of no recognition of this fact by those working in the alignment field.

6. Furthermore, I can see no reason why anyone reviewing the Hölzl Patent would find it obvious to abandon his light transmissive arrangement and adopt the light reflective arrangement proposed in the Hermann Application. This is particularly the case because an entirely different positioning of the two sensors relative to each other and the light source would be required as can be appreciated from a comparison of Figs. 3 & 4 of the Hermann Application with Figs. 2 & 3 of the Hölzl Patent which, in turn, would require modification of the packaging of the components and how they would be usable on the shafts being aligned. Without a reason or motivation for making such wholesale changes (which I find to be totally absent from the Hölzl Patent, the Examiner's reasoning, and the state of the art as I am aware of it), it is simply not reasonable to think that those working in the field would find it obvious to change from an established practice to one that had never been previously considered.

7. Therefore, based on my experience in the field to which the invention of the Hermann Application is directed, and based on the facts noted above, the evidence indicates that one of ordinary skill in the art would not have been able to arrive at a device having the features of the claims of the Hermann Application based on

anything objectively derivable from the Hölzl Patent, and the mere existence of commercially available optoelectronic sensors that could be used to practice the invention of the Hermann Patent.

The undersigned Declarant declares further that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

January 4, 2005
Date

Heinz P. Bloch

Heinz P. Bloch, P.E.

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((SPEC/(antireflection OR "anti-reflection coating") AND ((optical$ OR video) OR camera)) AND sensor$): 1012 patents.
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Refine Search | spec/(antireflection or "anti-reflection coating") and (o

	PAT. NO.	Title
1	6,650,916	Method and apparatus for providing high contrast imaging
2	6,650,474	Optical filter and optical device provided with this optical filter
3	6,650,455	Photonic mems and structures
4	6,650,419	Interferometric apparatus for precision measurement of altitude to a surface
5	6,649,951	Light-receiving element and photoelectric conversion device
6	6,647,350	Radiometric temperature measurement system
7	6,646,742	Optical device and method for multi-angle laser light scatter
8	6,646,636	Display system utilizing ambient light and a dedicated light source
9	6,643,024	Apparatus and method(s) for reducing the effects of coherent artifacts in an interferometer
10	6,642,998	Measuring device
11	6,642,994	Optical exposure apparatus and photo-cleaning method
12	6,637,882	Eye viewing device for retinal viewing through undilated pupil
13	6,636,678	Method and apparatus for waveguide optics and devices
14	6,635,912	CMOS image sensor and manufacturing method thereof
15	6,633,381	Polychromatic fluorescence measurement device
16	6,631,004	Single-pass and multi-pass interferometry systems having a dynamic beam-steering assembly for measuring distance, angle, and dispersion
17	6,628,432	Image reader and image reading method
18	6,628,355	Liquid crystal display panel including a light shielding film to control incident light

19 6,627,892 Infrared detector packaged with improved antireflection element
20 6,627,864 Thin image sensor package
21 6,626,532 Vari-focal spectacles
22 6,625,336 Optical sensor having dielectric film stack
23 6,621,584 Method and apparatus for in-situ monitoring of thickness during chemical-mechanical polishing
24 6,621,571 Method and apparatus for inspecting defects in a patterned specimen
25 6,621,561 Doppler rotational velocity sensor
26 6,621,557 Projection exposure apparatus and exposure methods
27 6,620,712 Defined sacrifical region via ion implantation for micro-opto-electro-mechanical system (MOEMS) applications
28 6,620,249 Method and apparatus for depositing thin layers
29 6,619,799 Optical lens system with electro-active lens having alterably different focal lengths
30 6,618,209 Optical apparatus
31 6,618,150 Compact transform spectrometer based on sampling a standing wave
32 6,618,141 Device for measurement of the spectral reflectance and process for measurement of the spectral reflectance
33 6,618,128 Optical speed sensing system
34 6,617,623 Multi-layered gate for a CMOS imager
35 6,614,827 High power laser
36 6,614,742 Optical head, magneto-optical head, disk apparatus and manufacturing method of optical head
37 6,611,546 Optical transmitter comprising a stepwise tunable laser
38 6,608,961 Optical system including a planar waveguide
39 6,608,847 Tunable laser with suppression of spontaneous emission
40 6,608,685 Tunable Fabry-Perot interferometer, and associated methods
41 6,608,677 Mini-lidar sensor for the remote stand-off sensing of chemical/biological substances and method for sensing same
42 6,608,671 Detector and screening device for ion channels
43 6,606,446 Miniature variable attenuator
44 6,606,340 Continuously grating-tuned external cavity laser with automatic suppression of source spontaneous emission and amplified spontaneous emission
45 6,606,171 Digitizing scanner
46 6,606,144 Projection exposure methods and apparatus, and projection optical systems
47 6,603,443 Compact display system controlled by eye position sensory system
48 6,597,449 Real time process control of optical components using linearly swept tunable laser
49 6,593,636 High speed silicon photodiodes and method of manufacture
50 6,593,213 Synthesis of layers, coatings or films using electrostatic fields

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